REMARKS

By this amendment, no claims have been added or cancelled, and Claims 1 and 10-15 have been amended. Hence, Claims 1 and 10-15 are pending in the application.

SUMMARY OF THE REJECTIONS

Claim 1 has been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over "The X-Bone" by Joe Touch ("*Touch*") in view of "IP Multicast in RealSystem G2" by V. Thomas ("*Thomas*"). Claims 12-13 have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over *Touch* in view of *Thomas* in view of "An Application Level Video Gateway by Amir et al. ("*Amir*").

Claims 1, 10, and 14-15 have also been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over "Policy Tree Multicasting Routing: An Extension to Sparse Mode Source Tree Delivery" by H. Hodel ("*Hodel*") in view of *Thomas*.

The Applicant respectfully traverses.

THE PENDING CLAIMS ARE PATENTABLE OVER THE CITED ART

Even if the cited art were to be properly combined, each of the pending claims recites a combination of features that is not disclosed, taught, or suggested by the cited art.

Claim 1

Claim 1, as amended, recites:

> A method comprising performing a machine-executed operation involving instructions, wherein the machine-executed operation is at least one of:
> A) sending said instructions over transmission media;
> B) receiving said instructions over transmission media;
> C) storing said instructions onto a machine-readable storage medium; and
> D) executing the instructions,
> wherein said instructions are instructions which, when executed by one or more processors, cause:
> > **receiving a signal, originating from a sender, which indicates an intention of the sender to send packets to an overlay group that includes a set of computers;**
> > **determining whether the sender has permission to send packets to the overlay group;**
> > if the sender has permission to send packets to the overlay group, then performing the steps of:

> determining whether a received packet, from the sender, is
> associated with the overlay group;
> **determining whether to send the received packet to a
> particular computer, in the set of computers, via
> a multicast connection or a unicast connection
> based, at least in part, on data indicating a
> transport preference of the particular computer;**
> upon determining that the received packet should be sent to
> the particular computer via the multicast
> connection, routing the received packet to the
> particular computer using a native routing protocol
> to send the received packet by multicasting; and
> upon determining that the received packet should be sent to
> the particular computer via the unicast connection,
> routing the received packet to the particular
> computer using the native routing protocol to send
> the received packet by unicasting.

At least the above-bolded features of Claim 1 are disclosed, taught, or suggested by the cited art.

Touch, *Thomas*, and *Hodel* are each cited to show portions of Claim 1. *Touch* is directed towards an approach (referred to therein as an X-Bone) for implementing an overlay network. *Touch*, however, does not provide many details about how the X-Bone approach actually works. For example, *Touch* is silent with respect to how senders send packets to an overlay group in the X-Bone approach.

Thomas lacks any teaching or suggestion of an overlay network. Instead, *Thomas* is directed towards an approach for enabling a client to inform a server that the client did not receive a packet sent from the server to the client using a multicast connection. In *Thomas*, if the client does not receive a packet sent from the server to the client using a multicast connection, the client initially attempts to use a back-channel to inform the server that the client did not receive the packet. If the client's attempt to contact the server using the back-channel is unsuccessful, then the client will then attempt to contact the server using a standard unicast live connection. Importantly, in *Thomas*, neither the server nor the client ever make a determination as to whether to send a received packet by a multicast connection or a unicast connection based on a transport preference of the destination of the packet.

Hodel lacks any teaching or suggestion of an overlay network. Instead, *Hodel* is directed towards an approach for performing multicast routing.

There are significant differences between the features of Claim 1 and the approaches of the cited art. Embodiments of the invention, while enabling packets to be sent to a destination computer in an approach that employs native multicasting, provide additional functionality and features not available through prior art approaches for performing multicasting. For example, the Applicant's specification (at page 8, line 28-page 9, line 5) teaches:

> To maximize the congruence between the OMN architecture and the existent IP Multicast service interface, hosts use the standard IP Multicast interface to inject data packets into and receive packets from an OMN. In one embodiment of the invention, overlay multicast senders (or proxies for the sender) explicitly signal to the network their intention to transmit. This is unlike IP multicast, where hosts may simply send packets addressed to a Class D multicast group without any explicit signaling. As part of this dialogue, the sender describes the channel that it intends to use (e.g., UDP multicast, UDP unicast, or TCP), and, once negotiated, overlay-enabled multicast packets may be sent into the network. This sender setup process may fail if the source does not have administrative permission to send. Thus, OMN sources can be tightly controlled in contrast to normal IP multicast, which provides no control over senders. (emphasis added).

Claim 1 recites the features of "receiving a signal, originating from a sender, which indicates an intention of the sender to send packets to an overlay group that includes a set of computers" and "determining whether the sender has permission to send packets to the overlay group." *Touch* cannot disclose, teach, or suggest these features because *Touch* is silent with respect to how packets are sent to an overlay group. Specifically, *Touch* lacks any teaching or suggestion of either (a) receiving a signal, originating from a sender, that indicates an intention of the sender to send packets to an overlay group, or (b) determining whether the sender has permission to send packets to the overlay group. Consequently, *Touch* cannot disclose, teach, or suggest these features.

Thomas and *Hodel* cannot disclose, teach, or suggest these features, as *Thomas* and *Hodel* each lack any teaching or suggestion of an overlay group, let alone (a) receiving a signal, originating from a sender, that indicates an intention of the sender to send packets to an overlay group, or (b) determining whether the sender has permission to

send packets to the overlay group. Even if, *arguendo*, a multicast group may be construed to be an overlay group, as shown above in the quoted portion of the Applicant's specification, according to prior approaches for performing multicasting, hosts may simply send packets addressed to a multicast group without any explicit signaling or permission. As a result, *Thomas* and *Hodel* would each teach away from these claimed features since (a) the sender is not required to signal their intention to send packets to a multicast group and (b) the sender is not required to have any permission level to send to a multicast group. Consequently, *Thomas* and *Hodel* each cannot disclose, teach, or suggest these claimed features.

Therefore, as each of *Touch*, *Thomas*, and *Hodel* fail to disclose, teach, or suggest the features of "receiving a signal, originating from a sender, which indicates an intention of the sender to send packets to an overlay group that includes a set of computers" and "determining whether the sender has permission to send packets to the overlay group" recited in Claim 1, even if one or more of *Touch*, *Thomas*, and *Hodel* were to be properly combined the resulting combination would still fail to disclose, teach, or suggest these claimed features.

Claim 1 also recites the element of "determining whether to send the received packet to a particular computer, in the set of computers, via a multicast connection or a unicast connection based, at least in part, on data indicating a transport preference of the particular computer." The portion of *Thomas* cited to show this element (page 2, section entitled "Back-Channel Multicast) does not involve any determination as to whether to send a received packet to the particular computer via a multicast connection or a unicast connection.

For example, the server of *Thomas* always sends a packet to the client via a multicast connection. If a packet, send from the server to the client using the multicast connection, is not received by the client, then the client will always try to initially connect to the server using a back-channel. The back-channel is characterized by *Thomas* as a multicast connection. If the client is unable to connect to the server via the back-channel to inform the server that the client did not receive a packet, then the client will always try to connect via a standard unicast live connection. Thus, in *Thomas*, while the client may connect to the server either by the back-channel or the standard unicast live connection,

the client <u>never</u> has to decide which of the back-channel connection or the standard unicast live connection the client should use to contact the server. As a result, the client never makes a determination as to whether to send a packet to the server via a multicast connection or a unicast connection, since the client <u>never</u> has the option of using one or the other. Similarly, since the server of *Thomas* <u>always</u> sends packets via a multicast connection, the server cannot makes a determination as to whether to send a packet to the client via a multicast connection or a unicast connection.

Further, the portion of *Thomas* cited to show this element (page 2, section entitled "Back-Channel Multicast) also does not involve data that indicates a transport preference of a particular computer. As explained above, the client of *Thomas* is not provided an option as to how it would like to receive packets. As a result, the server of *Thomas* does not store any data that indicates a transport preference of the client. Further, the server of *Thomas* <u>always</u> sends packets to the client using a multicast connection. Consequently, no portion of *Thomas* discloses, teaches, or suggests the element of "determining whether to send the received packet to a particular computer, in the set of computers, via a multicast connection or a unicast connection based, at least in part, on data indicating a transport preference of the particular computer."

As at least one element featured in Claim 1 is not disclosed, taught, or suggested by the cited art, either individually or in combination, it is respectfully submitted that Claim 1 is patentable over the cited art and is in condition for allowance.

Claims 10-15

Claims 10-15 are dependent claims, each of which depends (directly or indirectly) on Claim 1. Each of Claims 10-15 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 10-15 introduces one or more additional limitations that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those limitations is not included at this time, although the Applicants reserve the right to further point out the differences between the cited art and the novel features recited in the dependent claims.
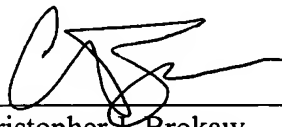
CONCLUSION

For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any fee shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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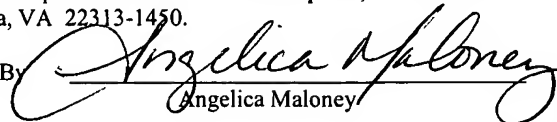Reg. No. 45,620
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On   January 24, 2006   By   Angelica Maloney